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The Veterinary Record

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v. 69 - no 37
Sept. 14, 1957

PATRON: HER MAJESTY THE QUEEN

VOL. 69 NO. 37 ISSUE NO. 4145 871 - 894

SEPTEMBER 14th 1957

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No. 37 SEPTEMBER 14th, 1957 Vol. 69

Registered for Transmission as a Newspaper *Price 2s. post free*

Hereditary Ataxia in Smooth-haired Fox Terriers

BY

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DURING the last 15 years a locomotory disturbance characterised by ataxia has been observed in some strains of smooth-haired Fox Terriers in Sweden. The disease becomes apparent during puppyhood and affected dogs have usually shown the first signs at about 4 months of age. The condition gradually becomes worse, leading to great difficulty in moving, and the dogs are usually destroyed after a short time.

Investigations into the nature of the disease have been carried on at the Royal Veterinary College since 1952. The pedigrees of breeding animals which have given rise to offspring with ataxia have been collected and frequency calculations made. As many affected dogs as possible were examined clinically with special attention being paid to the neurological findings.

Earlier Investigations

Detailed descriptions of locomotory disturbances associated with ataxia can be found in writings on both human and veterinary medicine. In those cases in which pathological examinations were carried out, errors in cerebellar development have been the usual findings. Extensive reviews of the veterinary literature on the subject have been made by Spuhler (1944) and Saunders (1952).

Bertrand *et al.* (1936) described a case of congenital ataxia in a French Bulldog which was the result of partial agenesis of the cerebellum. The same clinical disease with, on the whole, similar lesions in the cerebellum has been described in 2 Boston Terriers by Dow (1940) and in a Scotch Terrier by Verlinde and Ojemann (1946). Frauchiger and Fankhauser (1949) described a case of ataxia in a Fox Terrier with underdevelopment of the cerebellum and absence of the Purkinje cells and characterised the pathological picture as a "cerebellofugal atrophy." An ataxia appearing among certain families of Airedale Terriers has been described by Cordy and Snelbaker (1952). They found a hypoplasia of the cerebellum with absence or degeneration of the Purkinje cells. No account is given of investigations concerning the possible genetic background of the lesion.

All these writers pointed out that the dogs showed ataxia and that the lesions were chiefly localised to the cerebellum. Klarenbeck *et al.* (1942), on the other hand, have described spastic locomotory disturbances in a Scotch Terrier and assumed that changes in the central nervous system, especially in the *nucleus ruber*, appeared as the result of inbreeding.

The occurrence of ataxia, especially those types with a genetic background, in animal species other than dogs is shown in the following table. This has been largely compiled from Saunders (1952) bibliography of hereditary and familial diseases of the central nervous system in domestic animals. (See Table I overleaf.)

Present Investigations

Of the 27 cases of ataxia known to us, it was possible to examine 8 affected dogs at the Veterinary College (7 cases clinically and 5 *post mortem*). Two of these dogs were examined in the Department of Medicine, 1 in the Department of Surgery, and 4 in the Department of Radiology. The autopsies were carried out in the Department of Pathology.

Clinical Signs and Course of the Disease

During the first months of life, nothing abnormal was shown by the pups which later developed ataxia. In several instances it was the pups with the best conformation of the whole litter which became ill. Breeders believe that the affected individuals often have long and narrow skulls. This observation has not been confirmed by our examinations of ataxic

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This investigation has been supported financially by the Swedish Kennel Club.

TABLE I

Species and breed	Description of disease	Inheritance	Reference
CATTLE			
Hereford	Congenital ataxia caused by cerebellar hypoplasia	Not investigated, probably recessive	Saunders (1952)
Holstein-Friesian ...	Congenital spasm and ataxia. No lesions observed in the central nervous system	Recessive	" "
Jersey (Canada) ...	Congenital ataxia caused by cerebellar hypoplasia	"	" *et al.* (1952)
SHEEP			
Corriedale (Canada) ...	Congenital ataxia, cerebellar atrophy	"	" (1952)
Welsh and other breeds (England)	Congenital ataxia, cerebellar atrophy	"	" "
Swaledale	Congenital ataxia	Not investigated	" "
HORSE			
Oldenburger (Germany)	Juvenile ataxia manifested at 3 to 8 weeks of age. Lesions in the cerebellum and spinal chord	Recessive	" "
Thoroughbred ... ... (Germany)	Ataxia manifested at 1½ to 3 years of age. Central nervous system not examined	Not investigated	" "
CAT			
(Switzerland)	Ataxia as the result of agenesis or hypoplasia of the cerebellum	" "	Spuhler (1944)
(Holland)		" "	Verlinde *et al.* (1946)
(Switzerland)	Ataxia as the result of agenesis or hypoplasia of the cerebellum	" "	Frauchiger & Fankhauser (1949)
(U.S.A.)	Familial ataxia. Cerebellar hypoplasia	" "	Scheidy (1953)
(France and Switzerland)	Ataxia as the result of cerebellar hypoplasia. Intrauterine virus infection suspected	" "	Collet *et al.* (1954)
(Germany)	Ataxia as the result of cerebellar hypoplasia. In some cases the affected animals have become normal	Dominant	Koch, P., *et al.* (1955)
RABBIT			
Chinchilla	Juvenile ataxia as the result of degeneration of the vestibular and cerebellar nuclei	Recessive	Saunders (1952)
MOUSE			
(England)	Juvenile ataxia manifested at 3 weeks of age. No examinations made of the central nervous system. Affected animals are sterile	Recessive	Lyon (1955)
(Chile)	Ataxia and tremor manifested at 10 days of age. Atrophy of the Purkinje layer demonstrated in some portions of the cerebellum	"	Hoecker *et al.* (1954)
PIGEON	Juvenile ataxia. No examination made of the central nervous system. Affected animals are fertile	"	Riddle (1917)
POULTRY	Chick ataxia (congenital loco.). Lethal. Basic anatomical defect unknown	Autosomal, monogenous, recessive	Knowlton (1929)
	Chick ataxia. Cerebellar hypoplasia, degeneration of Purkinje cells	Sex-linked, recessive	Winterfield (1953)

dogs. The first sign, usually shown at 4 months of age, was restlessness; pups in outdoor kennels appeared disturbed and often searched out elevated places—a stone or the roof of the kennel. They also began to bark or howl at an early stage in a characteristic manner. It often appears as though the dogs have pruritus for they rub their heads against suitable objects, and soon after this they have difficulties in moving when going up or down stairs, or when they wish to jump onto a chair. The bouncing, dancing movements of these dogs are quite typical. These locomotory disturbances gradually become more pronounced. After a period of some months the symptoms stabilise and in some instances the dogs have been able to carry on a relatively normal life in spite of the abnormal movements. In no case has the disease *per se* proved to be fatal.

Affected animals are usually destroyed before they reach sexual maturity. In 3 cases, however, it was possible to check the reproductive capacity of mature, ataxic dogs. One of these, case 26, a bitch, showed a normal oestrous cycle. She was not bred. Semen from 2 male dogs proved to be normal although somewhat dilute (examined in the Department of Obstetrics and Gynaecology at the Veterinary College). The libido of 1 of these dogs was normal while the other showed no signs of sexual instincts.

Those cases which came to our personal notice were examined as follows. After a routine general examination, the manner in which the dog stood and

moved was observed. The locomotory behaviour has also been filmed. A neurological examination covering the cranial nerves, sensibility, and reflexes was carried out in the manner proposed by McGrath (1956).

In cases 22 and 24 (see below), the cerebrospinal fluid was examined and röntgenograms were taken of the skull and vertebral column. In addition, these 2 cases were observed continuously by us for 3 years.

Neurological Examinations

Case 22. Male, born May 25th, 1953.

Examination March 13th, 1954. The dog, which apparently felt confident in his surroundings and seemed to be mentally normal, showed a pronounced ataxia. He preferred to support his swaying body by standing with his legs somewhat apart. The legs were obviously extended and occasionally, especially when the dog was lying down, a tremor of the right fore leg and the tail could be observed. The dog could walk, trot, and gallop but fell easily because of the inco-ordinated and exaggerated movements. Such an insignificant movement as wagging the tail could lead to a loss of balance. The cranial nerves, fundi of the eyes, sensibility, and reflexes were normal.

When examined on February 1st, 1956, the condition of the dog remained unchanged.

Examination September 12th, 1956. Neurological state unchanged. It was necessary to anaesthetise the dog for radiological examination since he had become aggressive and bit readily. Reaction to "Mebumal"* was abnormal and respiratory arrest occurred after the injection of 1.5 ml. This was controlled by artificial respiration and oxygen. Röntgen examination of the skull and spine revealed no abnormalities. Cerebrospinal fluid: no cells; Pandy:—. Nonne:—.

Case 24. Male, born May 26th, 1954.

Examination May 14th, 1955. The dog appeared to be mentally normal and well adapted to his surroundings. He was very active and lively and could move at all paces, but the movements were inco-ordinated and so exaggerated that at the more rapid paces they could be more nearly described as hopping or dancing. Slightly irregular or very smooth footing resulted in the dog falling down as did attempts to assume the typical male position for urination. The dog stood with his legs somewhat apart and swayed, often with the head slowly oscillating. When he was still, fibrillary muscle contractions, especially over the gluteal region, could be seen. The inability of the dog to carry through a somewhat more complicated series of movements was clearly apparent when he descended stairs; he hesitated, often missed a step, and fell or tumbled head over heels. Sensibility was normal and all the reflexes examined were normal with the exception of the placing reflex for the right fore leg. This was slightly depressed.

Examination February 1st, 1956, showed that the condition of the dog had deteriorated. He could not move more than a short stretch, and after falling down he was not able to rise again spontaneously. Urinary incontinence had developed. The cranial nerves, ocular fundi, and sensibility were normal. The patellar reflex was exaggerated. The hopping reflex for all the limbs was depressed, and the righting reflexes were weak.

Examination September 12th, 1956. The dog was excited, panted, and fell on the slippery floor during the examination. An improvement seemed to have occurred since the previous examination. "Mebumal" narcosis was induced for the radiological examination and an abnormal reaction to the anaesthetic agent was shown. The fibrillary muscular twitches which at this time could be seen over the whole body were not repressed. When the dog lay on his side the limbs were extended. The depth of narcosis was difficult to determine and after 4 ml. "Mebumal" had been given, cardiac and respiratory arrest occurred which was refractory to treatment. The röntgenogram of the skull and vertebral column did not reveal any abnormalities. Cerebrospinal fluid: 4 leukocytes and 104 erythrocytes per mm.^{3}; Pandy:—. Nonne:—.

Autopsy O. 782/56. A small abscess about 3 mm. in diameter was found in the left ventricular wall about 1 cm. from the apex of the heart. A moderate number of linear haemorrhages were seen in the duodenal portion of the pancreas. A small focus of glia cell proliferation was demonstrated in the cerebellum. The other portions of the brain and the spinal cord were negative on microscopic examination.

Case 26. Female, born June 17th, 1955.

Examination February 1st, 1956. Unlike the other 2, this dog was privately owned. It appeared to be mentally normal and was very attached to its owner. The ataxia was less pronounced than in the previous 2 cases. The dog stood normally but swayed and displayed somewhat exaggerated movements of the extremities. Sensibility and reflexes were normal with the exception of the placing and hopping reflexes for the right hind leg which were obviously depressed.

Examination May 31st, 1956, showed unchanged condition.

Case 27. Female, born August 3rd, 1956.

This bitch, the result of a sib mating with an affected dog as sire (case 22), was apparently normal until approximately 3 months of age. At that time she began to make rapid champing movements of the jaws. Ataxic movements and difficulties in negotiating stairs were first noticed at 4 months of age.

Examination December 4th, 1956. The bitch showed a moderate ataxia. In spite of greatly exaggerated movements, the dog did not fall down if the footing was secure. She was active and lively but thin. All reflexes were normal.

Excerpts from the records of the 4 cases which we were unable to examine personally are given below.

Case 3. Male, born July 17th, 1942. Medical clinic 600/43.

* The composition of "Mebumal" is as follows: pentobarbitone 1.8 g., pentobarbitone sodium 4.0 g., urethane 25 g., alcohol (91 per cent.) 15.0 g., glycerine 12.5 g., aq. pro inj. ad 100 ml.

Anamnesis. Since puppyhood this dog had had posterior locomotory disturbances. In other respects it was active and had not shown signs of illness.

Examination July 30th, 1943. The dog showed locomotory disturbances which were most pronounced in the hind limbs; these were carried high, the gait was swaying, and the dog fell occasionally.

Autopsy O. 360/43. Negative, no definite changes demonstrated in the central nervous system.

Case 4. Male, born March 16th, 1943. Medical clinic 1177/43.

Anamnesis. The dog had shown ataxic movements since puppyhood. Upon arrival at the clinic (November 17th, 1944) it could not move straight ahead but instead progressed with strong crab-like movements, and occasionally fell down. The case was followed until February 24th, 1945, without any improvement being seen.

Autopsy O. 109/45. Negative.

Case 8. Female, born February 11th, 1949. Surgical clinic 63/50.

Anamnesis. The bitch was a year old and had shown locomotory disturbances in the hind limbs for some time. The hind limbs were lifted rapidly as in stringhalt in the horse. The symptoms gradually became more severe, and difficulties with the fore limbs were noticed. A few days before admission to the clinic the movements became ataxic and the bitch was capable of moving only short stretches without falling.

Examination February 1st, 1950. The bitch listened and reacted normally when spoken to; there appeared to be no mental disturbances. In the kennel the bitch preferred to sit with the fore limbs somewhat abducted and the hind limbs extending forwards. The fore limbs were usually crossed when the bitch was lying down. She was incapable of moving normally and could not remain standing for any length of time without falling. The hind limbs were somewhat hyperextended. The bitch showed a pronounced tremor.

Autopsy O. 116/50. Negative.

Case 13. Male, born August 29th, 1950.

Anamnesis. Ever since the dog was able to walk he had been affected by a bilateral locomotory disturbance involving the hind limbs. He had been unsteady, with abnormally extended joints, and walked with a dancing gait. According to the owner, the dog had not been able to control his reflexes sufficiently to be housebroken. The dog has behaved normally in other respects. He was destroyed at 7 months of age.

Autopsy O. 256/51. Negative.

Differential Diagnosis

The nervous disturbance described in the present article may be classified as a cerebellar ataxia. The cerebellar dysfunction may arise from various causes. There is a similarity between the clinical picture shown in this disease and that which dogs may show as a sequel to distemper. It was impossible for us to eliminate the possibility of isolated cases of distemper being included in the ataxia material since we did not have the opportunity of following personally the course of the disease in all the affected dogs. According to available information, however, none of the affected dogs showed any other signs of distemper. In those cases of ataxia in which an autopsy was performed, no changes were demonstrated which indicated that the dogs had passed through distemper. It seems justifiable to eliminate distemper as the cause of the locomotory disturbance.

It is also possible that environmental factors could contribute towards causing the ataxia. Pups whelped in the spring and summer are generally considered to have greater vitality than those whelped during the autumn and winter months. Advantages can be derived from the better possibilities for exercise and vitamin supply for both the bitches and the pups.

The table given below shows the number of affected and healthy smooth-haired Fox Terriers born at different times of the year. This information has been obtained from the registration book of the Swedish Kennel Club.

TABLE II

RELATIVE DISTRIBUTION ACCORDING TO THE MONTH OF BIRTH OF LITTERS WITH ATAXIC PUPS DURING THE YEARS 1941–55 COMPARED WITH 457 NORMAL LITTERS DURING 1946–55

Month	Litters with ataxia per cent. of the total	Normal litters per cent. of the total
January ...	0	4·0
February	5	6·3
March ...	15	10·9
April ...	10	12·5
May ...	15	11·4
June ...	20	9·6
July ...	15	10·9
August ...	10	9·0
September	0	9·4
October ...	5	7·9
November	5	5·5
December	0	2·6
Σ ...	100	100·0

The figures given in the table show that the seasonal distribution is, on the whole, similar for ataxic and normal litters (no heterogeneity). From this, it can be assumed that time of year for birth did not influence the occurrence of the disease. Since affected pups may have entirely healthy litter mates, all of which receive the same diet, it seems possible to eliminate dietary factors from the question of aetiology.

The first recognised case of the ataxia concerned in these studies was a female pup born in April, 1941, by a sire imported from England out of a Swedish bitch with an English sire and dam. The second case, also recognised in 1941, was encountered in a kennel breeding large numbers of smooth-haired Fox Terriers. The dam of this pup gave birth to more affected pups in subsequent litters and the breeder soon began to suspect the occurrence of an hereditary disease. This suspicion was strengthened when the condition also appeared in later generations originating from the same breeding bitch and dogs closely related to her.

Cases of ataxia in other kennels and involving other breeding lines appeared sporadically up to 1949. Since then, the condition has been largely limited to the descendants of a single sire.

Preliminary investigations carried out by us including the calculation of the ratio between healthy and affected pups within a litter also supported the hypothesis of a genetic defect.

Possible aetiological factors such as distemper, rearing, feeding, and heredity have been discussed above. To this list can be added the effects of trauma, parasite infestation, and toxic agents (Bindrich, 1955. A more-detailed investigation has made it possible to exclude all of these factors except those having a genetic background. Our material has therefore been subjected to a detailed genetic analysis.

Genetic Analysis

Several circumstances supported the early suspicion that the ataxia was dependent upon genetic factors. A typical feature of the disease is occurrence within families and its distribution within the litters. In the 2 kennels in which the disease first appeared in the 1940's, it was possible in 1 case to trace the ataxia to a much-used sire directly imported from England. In the other instance, a prominent breeding bitch closely related to English strains transmitted the defect through several generations. The strain originating from this bitch was taken out of breeding in 1946 and no cases of ataxia have subsequently appeared in this kennel. The familial occurrence of ataxia is still evident, and during recent years the defect has appeared in some lines of smooth-haired Fox Terriers with good hunting qualities maintained in north Sweden. Since 1949, the ataxia cases have been concentrated among the offspring of a single stud dog, the result of a sib mating, and some of his sons which have left at least 17 affected pups out of different but related bitches.

The material upon which these studies are based comprises 23 litters and a total of 91 pups of which 25 displayed ataxia. An additional 2 pups (cases 3 and 27) have not been included in the statistical treatment of the incidence figures. As far as case 3 is concerned, details of the litter are not available. Case 27 was the result of a test mating between an ataxic sire and his full sister. Table III summarises the frequency and the sex ratio of the affected dogs born between 1941 and 1955.

TABLE III

	♂	♀	Σ
Normal ...	32	34	66
Defective ...	14	11	25
Σ	46	45	91

As can be seen from the table, normal and defective dogs were equally divided between the sexes. A x^2-test does not reveal any deviation from a chance distribution. The 91 pups were born in 23 litters, an average of 4.0 ± 0.36 per litter. As a comparison, it can be mentioned that the average number of pups in 457 normal litters of smooth-haired Fox Terriers registered in the Swedish Kennel Club between 1946 and 1955 was 4.17 ± 0.07. Examination of the pedigrees for all 27 affected dogs shows that inbreeding was practised to various degrees and that several common progenitors appear among both the sires and the dams. All the colour patterns accepted by the breed standards are represented in the material.

The occurrence and distribution of ataxia indicate a genetic background. In the establishment of an hypothesis to explain the inheritance there are several reasons for the elimination of a dominant gene with complete penetration. An affected male under natural conditions is probably incapable of mating a bitch, and as far as we know, in no instance has an affected bitch been bred or whelped. The general characteristic is that phenotypically normal dogs give rise to affected offspring. In the section dealing with the clinical observations it was pointed out that the ataxia is not lethal and that the number of pups in "defective litters" is as large as in normal litters. Accordingly, there is no support for the assumption that the ataxia is caused by a dominant gene. The distribution figures given in Table III, on the other hand, suggest a *recessive, monogenic, autosomal gene.*

If the gene for ataxia is designated "a" and the normal gene "A," then AA, Aa, and aa are possible genotypes. Dogs affected with ataxia ought to be recessive homozygotes aa if penetration is complete. Since, however, only healthy phenotypes (genotypes AA and Aa) can mate under normal circumstances, only the following matings are theoretically and practically possible:—

AA × AA
AA × Aa
Aa × Aa

No recessive homozygotes could be produced in the first 2 instances although they could appear in Aa × Aa matings.

The theoretical distributions in a mating between heterozygotes are 1/4 AA, 1/2 Aa, and 1/4 aa with the latter being defective. If the ataxia is caused by a regularly recessive gene, and if the penetration is complete, one-quarter of all the pups in the material studied should be defective. Ninety-one pups are included in our material; 23 of these should theoretically be defective and the remaining 68 normal. The theoretically calculated distribution agrees very closely with the actual distribution, *i.e.* 25 and 66 respectively. A x^2-analysis shows that there is no significant difference between the actual and the theoretically calculated distribution.

It has already been mentioned that male dogs showing ataxia are incapable of mating a bitch, and therefore cannot give rise to offspring. In only one exceptional case has a defective male been able to sire a litter. A defective dog (case 22, see above) and his phenotypically normal sister were acquired for experimental purposes from a litter in which the gene for ataxia was known to be present. Since it was possible to obtain semen from this dog, several attempts were made to inseminate his full sister and even his dam artificially. Inseminations carried out on 3 different occasions were without result. Since the dog showed strong libido, numerous attempts were made to hold him and help him with normal

copulation. After several failures it was possible on one occasion to assist him in carrying out complete copulation with his full sister. Five pups were the result of this control mating of which 1 died after a few days (autopsy P. 908/56: negative). The remaining 4, 2 females and 2 males, developed normally until 3 months of age when one of the bitches began to show the first signs of ataxia. The nervous disturbances developed into a typical ataxia case within a short time (case 27, described above).

It was naturally impossible to determine before the control mating whether or not the healthy bitch carried the ataxia gene. Since the control mating with the defective full brother resulted in a pup with ataxia, it follows that the bitch must have been a heterozygote carrier of the ataxia gene, Aa. The male dog can be considered aa. Theoretically, the mating of the recessive homozygote aa with the heterozygote bitch Aa should have resulted in half the pups being normal, half defective. A single litter is naturally insufficient material upon which to base a statistical calculation of the agreement between the expected and the obtained ratios. We hope to be able to repeat this sib mating for control purposes.

The conclusion can be drawn that ataxia in smooth-haired Fox Terriers probably is a recessive, monogenous, autosomal hereditary characteristic.

Ataxia in smooth-haired Fox Terriers first appeared in Sweden among pups of English blood-lines. As was mentioned above, we have been able to show that the pedigrees of all 27 defective dogs reveal common progenitors among both the sires and the dams. The dog appearing most recently in the pedigrees is the male Dandifino KCSB 1601 FF, born in 1925. Somewhat earlier appears Cromwell Raw Umber (sire Cromwell Ochre's Legacy, dam Cromwell Tangirl KCSB 252 Z). Whether the ataxia can be ascribed to a mutation occurring in one of these dogs or whether the defect arose even earlier is impossible for us to determine. Further contact with English breeders may perhaps lead to clarification of this question. According to information we have received from England, ataxia has also appeared in a kennel there. The defect, however, does not appear to be widespread or generally known. The gene has apparently not been as widely distributed in England as in Sweden.

Breeding Precautions

Since it has been shown that ataxia in smooth-haired Fox Terriers is hereditary, it is clear that a systematic elimination of the responsible gene ought to be undertaken. Elimination of gene-carriers will be a long-term proposition since the inheritance is recessive. The recessive homozygotes are not a problem as they are incapable of reproduction. To determine whether or not an animal is genotypically healthy AA or a heterozygote gene-carrier Aa is more difficult. Because smooth-haired Fox Terriers are not a common breed in Sweden, and the ataxia has familial tendencies for which the gene-carriers are already fairly well known, elimination should succeed in a relatively short time. The following recommendations can be made to the breed organisations. First, all animals, male or female, which have been shown to carry the ataxia gene should be removed from breeding and excluded from hunting trials and shows. Secondly, a list of all known gene-carriers should be prepared and published regularly by the pedigree committees of the breed organisations concerned. Thirdly, dogs definitely known to be carriers of the gene should be made available to owners for the carrying out of test matings. Such test matings can be carried out in several different ways. The most effective method for dog breeding probably is concentration on the males. Possible gene-carriers can be detected after matings with an adequate number of their own daughters.

Summary

A locomotory disturbance associated with ataxia and which appeared among smooth-haired Fox Terriers in Sweden during the 1940's is described. The defect, which is neither lethal nor congenital, displays familial tendencies. The ataxia is first manifested between 4 and 6 months of age and leads to inability to move normally. A description is given of 27 defective dogs belonging to 25 litters comprising a total of 91 pups. An account of the clinical and neurological findings and a genetic analysis of the defect is given. The inheritance is shown to be through a recessive, monogenous, autosomal gene. It has been possible to trace the defect back to dogs imported from England. Pathological examinations have not given any definite indication of the anatomic basis of the defect. Investigations are being continued in an effort to clarify the morphological background. The article concludes with recommendations for the elimination of the defect.

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ANNOTATION

The Degree and Duration of Immunity in Cattle Resulting from Vaccination with S.19 *Br. abortus* Vaccine and its Implication in the Future Control and Eventual Eradication of Brucellosis

IN a previous annotation in this journal (1953), all the evidence at that time available concerning the degree and duration of immunity following the use of S.19 *Br. abortus* vaccine was reviewed; it was stressed that investigators in different countries had reported diverse results which, in most cases, could be attributed to the employment of a variety of challenge doses, different conditions of maintenance, and cattle of unknown history for experimental purposes. Nevertheless, there was ample evidence both from experimental and field observations, to show that S.19 appeared to confer satisfactory immunity, at least in the first pregnancy, although the duration of this immunity was still not known. Although 1 dose (5.0 ml.) of S.19 vaccine in calfhood was considered to be probably effective, without recourse having to be made to further inoculations of vaccine, it was suggested that this opinion should be viewed with caution because of the well-established fact that in herds, already heavily infected, calfhood vaccination had often been associated with excellent results, a situation which might well have resulted from an opportunity for a further immunological stimulus following initial vaccination. Moreover, until adequate evidence became available concerning the degree and duration of immunity, it was logical at that time, despite the fact that S.19 is a living vaccine, to advocate more than one vaccination for general purposes and this procedure has, in the past, been adopted in many herds throughout the country, adult as well as calfhood vaccination being frequently practised.

The British research programme, co-ordinated by the Brucellosis Committee of the Agricultural Research Council, has been designed mainly to investigate methods which might prove suitable for the immunisation of cattle under controlled experimental conditions so that eventually we might be able to adopt whichever method or methods were best suited to the conditions prevailing in this country. After an initial programme of many experiments in guinea-pigs and cattle, as reviewed by Gordon (1953), the cumulative evidence was clearly in favour of S.19 as being the most effective and reliable vaccine for general use in Britain; accordingly much of our recent research programme has been devoted to further investigation of the immunological value of this particular vaccine when used in single or multiple doses at different ages, bearing in mind the possible implication of vaccination with an agglutinogenic strain on any subsequent eradication schemes.

In the previous annotation (1953) it was explained how an experiment to determine the degree and duration of immunity in cattle employing S.19 under carefully controlled experimental conditions, was initiated at Compton in 1949, a provisional plan of the experiment was provided, and it was stated that this experiment was expected to terminate in 1956. By that time, it was hoped that separate groups of cattle previously immunised with 1, 2, and 3 doses of S.19 prior to breeding age, would have been exposed to challenge with a virulent strain of *Br. abortus* at each pregnancy from the first to the fifth. This experiment has now terminated. For convenience, a plan, showing the final arrangement of the different groups, is shown in Table I. In due course, the results obtained will be published in full as an A.R.C. publication, but from the summary in Table II, certain facts can readily be appreciated here. An assessment of immunity over the series of five pregnancies has been completed and Table II illustrates the " Infection Index " for each of the groups at successive pregnancies. This Index, which is identical with that employed by Goode, Manthei and Amerault (1957) places a numerical value on the degree of infection in the experimental animals, thus:—

5 signifies abortion with isolation of *Br. abortus* from the genital tract.

4 signifies full-time calving with isolation of *Br. abortus* from the genital tract.

3 signifies infection of the mammary gland.

2 signifies a post-challenge rise in the blood sero-agglutination titre of at least 2 tubes, which persisted for at least 90 days. (See Tables I and II overleaf.)

The mean of these responses for the individual animals gives the " Infection Index " for each group. This individual assessment gives a value of 10 for a heavily infected animal which has aborted with a rise in blood agglutinins, infection in the genital tract and mammary gland, 0 for a completely resistant animal, and intermediate figures for various degrees of infection, as shown above. Thus, a ready comparison between the British and American results can be made, always bearing in mind that the most recent American challenge dose of 733,000 *Br. abortus* strain 2308, is much less than the doses of 150×10^6 and 15×10^6 *Br. abortus* strain 544, commonly employed in Britain. All the evidence published by the above-mentioned investigators at Beltsville, supports our view, based on experimental results at Compton, that the immunity resulting from 5.0 ml. of S.19 in calfhood does not deteriorate with age; previously it was stressed in some quarters in the U.S.A. that immunity induced by S.19 waned as the animals became older, although it should be pointed out that the investigators at Beltsville suggested a possible trend towards greater immunity in older animals.

It is apparent from Table II that no appreciable waning of immunity occurs over the five pregnancies, irrespective of the original method of vaccination. Thus calves vaccinated once, twice, or three times in 1949, still showed detectable immunity when challenged at their fifth pregnancy in 1956. The degree of immunity, resulting from the different methods

TABLE I

EXPERIMENT TO COMPARE THE DEGREE AND DURATION OF IMMUNITY IN CATTLE FOLLOWING SINGLE AND MULTIPLE VACCINATIONS WITH S.19.

Groups	Age at Vaccination	Infective dose	Numbers of cattle tested at each pregnancy					Total
			1st	2nd	3rd	4th	5th	
I	6 months	LD			10	10	9	88
		HD	10	20	10	10	9	
II	18 months	LD			10	10	7	84
		HD	10	20	10	10	7	
III	6 and 12 months	LD			10	10	10	89
		HD	10	20	10	10	9	
IV	6, 12 and 18 months	LH			10	10	11	82
		HD	10	10	10	10	11	
V	*Controls*							
	Fellows to those in Groups 1 to 4	LD			5	5	8	50
		HD	5	10	5	5	7	
	Compton cattle	LD			5	5	2	40
		HD	5	10	5	5	3	
	LD signifies Light Challenge Dose—15 × 10^6 *Br. abortus* strain 544.							—
	HD signifies Heavy Challenge Dose—150 × 10^6 *Br. abortus* strain 544.							433

TABLE II

"INFECTION INDEX" FOR EACH GROUP FROM THE 1ST TO THE 5TH PREGNANCY CHALLENGE DOSES—15 AND 150 MILLION *Br. Abortus* STRAIN 544

Pregnancy	Challenge	Groups				
		I Vaccinated at 6 months	II Vaccinated at 18 months	III Vaccinated at 6 and 12 months	IV Vaccinated at 6, 12 and 18 months	V (Controls)
1	150 × 10^6	5·0	7·4	5·3	0·7	9·5
2	150 × 10^6	7·5	6·2	6·0	7·7	9·9
3	15 × 10^6	2·1	2·9	3·5	0	9·1
	150 × 10^6	8·3	4·7	4·4	3·5	9·4
4	15 × 10^6	1·0	2·2	2·0	1·7	9·2
	150 × 10^6	5·5	3·3	2·4	5·1	9·2
5	15 × 10^6	5·3	3·0	3·8	1·5	8·0
	150 × 10^6	3·1	4·4	3·6	3·8	9·5
Total		37·8	34·1	31·0	24·0	73·8

employed in this experiment, appeared to be relatively constant for all the groups, although there is some evidence to show that multiple vaccination appeared to give a slightly better result than vaccination on one occasion only. This slight advantage resulting from more than one vaccination is, however, completely outweighed, as is also single vaccination at 18 months of age, by the undesirable persistence of agglutinins rendering future agglutination tests on these animals of little value in differentiating resistant from infected stock. It may be concluded from this 7-year experiment which has involved a total of about 500 cattle, maintained under strict conditions of isolation that, for all practical purposes, 1 dose of vaccine at about 6 months of age will confer an adequate immunity for at least 5 pregnancies and probably for the normal milking life of the cow.

Quite apart from those experimental results, it is perhaps of some practical interest to consider certain aspects of brucellosis in the field at the present time. There can be no doubt that when so-called "breakdowns" occur in vaccinated herds, they are invariably associated with the presence of a considerable weight of infection on the premises, rather than the presence of strains of *Br. abortus* of enhanced virulence. This is in fact analogous to the situation shown in Table II where at the 3rd, 4th, and 5th pregnancies, animals, originally immunised in the same way, reacted differently to a light or heavy challenge dose, the latter producing a greater degree of infection. A considerable number of field strains isolated from such breakdowns have been examined for virulence at Compton during the past few years and none has shown any indication of increased pathogenicity when compared with strain 544 in laboratory animals; consequently the best results from the use of S.19 vaccine can always be expected on those farms where the management, despite vaccination, is such as might well be expected in a "test and eradication" scheme and where the vaccine is fully viable at the time of inoculation.

Clinical brucellosis has now virtually disappeared

from Britain and the well-known " abortion storms " of the past are no longer a hazard for the dairy farmer, a fact which has been amply demonstrated by the considerable difficulty encountered nowadays in obtaining aborted foetuses and membranes for teaching or demonstration purposes. Furthermore, figures available from A.I. centres such as Reading (1956), indicate that the abortion rate has dropped to 1.5 per cent., a level to be expected in the complete absence of genital infections. Furthermore, Withers (1952, 1955) in a field survey found that the abortion rate has decreased considerably when compared with the figures presented by Lovell and Hill (1940), *i.e.* prior to the use of S.19 vaccine, and it is clear that the majority of abortions nowadays are not associated with *Br. abortus* infection. It is unfortunate, however, that the occurrence of *Br. abortus* in the milk supply is still so high, as much as 10 per cent. of samples in many areas, as shown by Ferguson and Robertson (1954) in Scotland, and the Report of the Public Health Service (1956) in England.

Fortunately, apart from remote rural areas, pasteurisation acts as an effective safeguard in so far as the human population is concerned, but this is no cause for complacency. In the writer's experience, contamination of the milk supply is frequently associated with the presence of perhaps only one or more old infected cows in the herd, often these animals have no known history of clinical disease, although by the presence of a localised infection of the mammary glands, such cows readily contaminate the whole supply from the farm. These animals, many of which would be graded 3 on the experimental numerical evaluation of infection, probably constitute part of the cattle population which, despite vaccination, or perhaps in some instances, in the absence of vaccination, have developed a localised infection of the mammary gland. With the vaccination of every heifer calf and the automatic elimination of these older carrier cows by normal culling practice, it would be possible, without any further legislation, to apply in a few years' time one or other of the several serological techniques now available for detecting infected animals and thus establish an increasing number of self-contained herds completely free from the disease. These would then serve as useful sources of breeding stock of known freedom from brucellosis and such a scheme would rapidly gain momentum. It could be argued that this system has already been tried and found wanting in this country, but it should be remembered that the situation before the war was entirely different, owing to the widespread occurrence of the disease and the lack of an efficient, safe vaccine.

The possibility of further infection gaining access to established clean herds from extrinsic sources, apart from cattle, is remote, as alternative reservoir hosts for *Br. abortus* to the best of our knowledge are not common in this country. There is some evidence to show that wild deer may become infected (McDiarmid, 1951) and Bosworth (1937) has confirmed infection in the brown rat, but it is extremely unlikely, because of the low carriage rate in these species, that such hosts would play an important rôle in the future epidemiology of the disease. Moreover, many other species of free-living mammals and birds have been examined serologically and culturally by the writer during the past 14 years without the demonstration of antibody or the causal organism. Feral goats in remote areas could, perhaps, constitute a further reservoir of infection, perhaps even *Br. melitensis* might be harboured by this species, and this possibility might be worth investigating in due course. Suffice it to say that for experimental purposes, 3 self-contained herds of dairy cows have been kept free from brucellosis at the Agricultural Research Council's Field Station at Compton for over 10 years without the need for vaccination, despite obvious contact with a variety of wild species of mammals and birds.

Search still continues for improved antigens; quite apart from S.19, a dead non-agglutinogenic adjuvant vaccine prepared from *Br. abortus* strain 45/20 (McEwen), and capable of engendering an effective immunity in guinea-pigs, is at present being further investigated in cattle. Furthermore, killed antigen prepared from a mucoid strain of Brucella and absorbed on aluminium hydroxide (Frahm & Lembke, 1955), has shown that it might be of potential value in cattle (McDiarmid, 1957), although it has the same disadvantage as S.19 in being agglutinogenic. For the present, however, the experimental evidence which has accumulated over many years concerning S.19 is such that there can be no doubt of the immediate benefit which would result from the compulsory vaccination of every heifer calf in Britain at about 6 months of age with a single dose of this vaccine, a policy which, no doubt, would be welcomed by the vast majority of farmers. At present, in Britain, probably only 1 of every 3 heifer calves under 1 year old is receiving this vaccine, although in Berkshire the number of heifers vaccinated prior to breeding age may be as high as 70 per cent. of the animals which could, in fact, be presented for vaccination. Despite this, S.19 has undoubtedly done more than any other single factor to reduce clinical brucellosis to negligible proportions and to diminish the actual weight of infection in the milk supply; it would undoubtedly do still more, if, in the light of present knowledge, a programme of compulsory vaccination was introduced forthwith as another step towards eventual eradication.

A. MCDIARMID (August, 1957).

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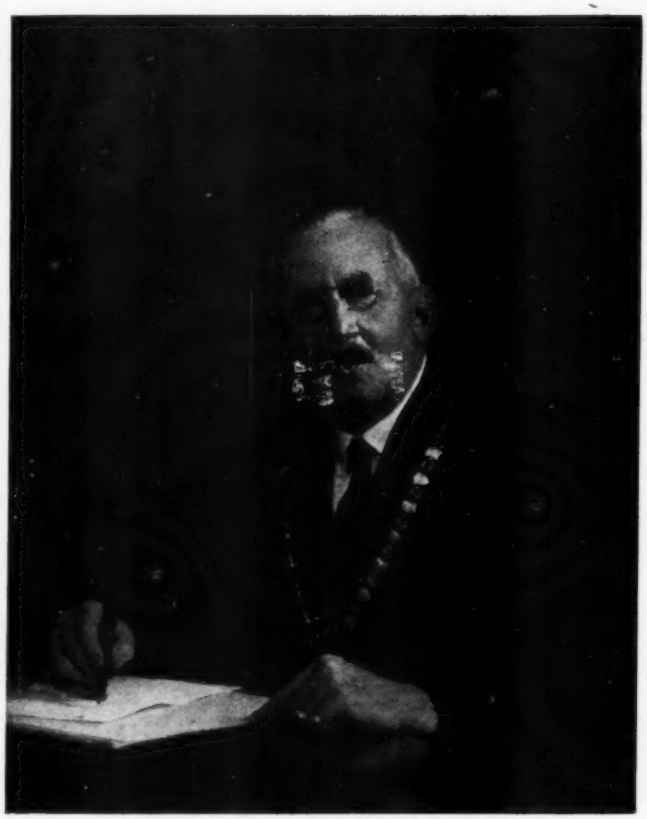
George Henry Wooldridge (1877-1957)

Emeritus Professor of Veterinary Medicine, Royal Veterinary College, London

WITH the death of Emeritus Professor G. H. Wooldridge on Friday, August 30th, there has passed from among us the last of the giants of the veterinary profession of the earlier part of this century. His death marks the end of an era.



Professor Wooldridge — " Uncle George " to so many within and without the profession, both in Britain and in many countries overseas — was born at Stoke-on Trent in 1877, the son of a Midland farmer, a member of a large family — and was brought up in the hard but rewarding school of practical agriculture. He qualified in 1899 from the Royal Veterinary College, London, after a brilliant career as a student, gaining the rare award of First-Class Honours in the Final Year Examination. He was also awarded the Centenary Scholarship and the Coleman Prize. For a short while he held a tutorship at the London College, assisting the Professors of Medicine and Surgery, and became a junior colleague to men who each in his own way made a name for himself which is still remembered.

It is well worth recalling some of Professor Wooldridge's colleagues, for as the years pass and new generations of veterinary surgeons arise, the names and achievements of many of those who laid the foundations for much of the success and high status of the profession to-day, tend to become cloudy and shadowed, if indeed they are remembered at all. The list is impressive. Sir John M'Fadyean, the most successful of the early veterinary pathologists, and a research worker of the highest ability, much of whose work stands firm to-day, was his colleague and principal for many years; Sir Frederick Smith, " the father " of veterinary physiology, collaborated with him; such eminent clinicians as Penberthy, Macqueen, Henry Grey, Dollar, and Hobday were his friends and colleagues; and of non-veterinary men of eminence with whom he was closely associated during his academic career, the names of Lander, Evans (" Tryp." Evans), and Legge Symes, may be mentioned.

Professor Wooldridge's earlier career is not known in full detail by many, but both before and after qualifying, he spent some time seeing practice with Mr. Wilson of Nantwich (the father of Mr. Tom Wilson who still carries on the veterinary practice there). It was here that he laid the sound foundations of his knowledge of dairy cattle in health and disease, of which he was to become such an expert in later years.

In late 1900 he obtained the post of Professor of Veterinary Science and Bacteriology at the Royal Agricultural College at Cirencester, where his lectures and demonstrations were exceedingly popular and are still remembered by those who passed through his hands—a now diminishing number.

In 1903, he was appointed to the Chair of Medicine at the (then) Royal Veterinary College in Dublin, a post he held for 5 years. During this period he was elected to membership of the Royal Irish Academy—an election of which he was always very proud.

During these earlier years Wooldridge had been building up his veterinary knowledge and experience and it was in 1908 when he was appointed to the post of Professor of Materia Medica, Hygiene, and Dietetics, at the Royal Veterinary College in Camden Town, that he first had opportunity to put his knowledge at the disposal of London Veterinary students, and to exert upon them the great influence which continued until his retirement from the Chair in 1943.

Some years later he was appointed to the Chair of Medicine as well and undertook an even heavier burden of teaching in the College. It is an interesting and salutary reflection to note that in those days the Professor of Medicine also taught hygiene, dietetics, and breeding, and took a full share both in the

internal practice of the College and in the consultative services it provided. For many years, before the first war, the remuneration for this onerous post was not higher than £400 a year (£8 a week) and it must be remembered that the work was heavy since it consisted largely of equine work, with, before the First World War, only a sprinkling of the easier canine work which was to develop to such an important level after the war ended and during the 1920's and 1930's. The transition from an almost solely large animal to a largely canine activity, however, was taken by "Uncle George" with equanimity. Although small animals were to occupy much of his more mature life's work, never did he lose sight of the great and increasing importance of the food-producing farm animals, even though as time went on the geographic situation of the College meant that clinical work with these animals became less. Consultative work, often necessitating long and arduous journeys to different parts of the country, remained, however, a major activity. It was the soundness and common sense of his advice that led to his services being much sought by veterinary surgeons in difficulties.

It was a measure of the recognition of his ability that led the British Dairy Farmers' Association to retain his services over so many years for the very responsible post of principal veterinary consultant for the Dairy Show, and many a batch of students, chosen by him to help during the days of the Show, carry vivid memories of day and night duties under the supervision of "Uncle George." His friendly advice to harassed owners, and the tact and sympathy he could display when some decision disappointing in the extreme to an unlucky owner had to be made, was a liberal education in itself. At the same time he could be stern or severe when the occasion demanded.

His contributions to knowledge of veterinary science are not easy to detail. The veterinary journals of the earlier years of the 20th century contain many articles from his pen upon a variety of subjects. Many of these bear reading again to-day as examples of sound clinical observation. His successful occupancy of the Chair of Veterinary Medicine for 35 years, and the excellent training in clinical work and the handling of clients which he gave to so many classes of veterinary students, both under the old 4-year course, and more recently under the 5-year course, are achievements in themselves and have had influences upon the character and quality of the veterinary practices of his old students which have been far-reaching. His contributions by presenting papers and taking part in discussions at Divisional and Congress meetings of the old N.V.M.A. and later the B.V.A., were all characteristically full of wisdom, wit and common sense; sometimes with almost prophetic accuracy he predicted what later research was able to prove. Perhaps he will be most widely remembered as the editor of *Wooldridge's Encyclopaedia*, which when first published in 1923 and for many years afterwards, was the most reliable and up-to-date text-book of veterinary medicine and surgery in the world. It was an acute personal disappointment to him that the disturbances created by the Second World War and later his many duties and failing health prevented him from completing further editions.

Both the R.C.V.S. and the B.V.A. owe much to Professor Wooldridge. The list of the services he rendered to each is a long one. He served the N.V.M.A. faithfully and well during the time he was in London. In 1909 he stepped into the gap left when the Hon. Treasurer, J. F. Simpson, became unable to continue owing to ill health. He was then elected to the post in his own right and held office for 16 difficult years, during which (1914 to 1919) he also undertook the duties of Hon. Secretary. He was elected President of the then N.V.M.A. in 1926 and 13 years later, in 1939, he became President of the R.C.V.S., during the difficult period at the start of the Second World War. He served continuously as an elected Councillor for the very long period of 32 years, from 1924 till 1956, during which time he served on numerous committees.

In 1928, he was awarded the John Henry Steel Gold Medal, the oldest and highest award in the gift of the R.C.V.S., for scientific or literary work of high merit connected with the profession.

The esteem in which he was held by the whole profession culminated in arrangements made in 1956, when he retired from Council of the R.C.V.S., for the painting of his portrait, and although his death has preceded the unveiling and presentation ceremony which had been arranged for the autumn of this year, it is satisfactory to be able to report that the portrait has been completed, and both Professor and Mrs. Wooldridge have seen it, and have expressed their satisfaction with it.

During latter years, failing sight was a handicap which he found hard to bear, as would be expected in a man who always took so much interest in everything around him, but the courage he displayed in overcoming the disadvantages of impaired vision was an object lesson to all.

Apart from professional affairs, Professor Wooldridge played a full part in social activities. In his younger days he was a footballer of note, a keen and active horseman, and even until a ripe age was very good at tennis, bowls, cricket, croquet and other ball games. He held numerous offices, including that of President, in clubs in north London, especially Hendon where he lived for many years. He always took a very real interest in the various sports clubs both at the Dublin College and for a much longer period in those of the Royal Veterinary College. He occupied at one time or another the Presidency of almost every College Sports Club, and when he and Mrs. Wooldridge donated the "Wooldridge Cup" for competition between the Rugby Clubs in Dublin and London, he assured that there would continue a healthy athletic rivalry between the two veterinary Colleges in which he had most interest.

Throughout his mature years he was a Mason. In Craft Masonry Professor Wooldridge achieved Grand Lodge Honours (P.A.G.D.C.) and he was also a member of London Grand Rank. He was a founder member of London Staffordshire Lodge

(*Continued on page* 884 *col.* 1.)

THE PRESIDENT'S RECEPTION

The happiest and most successful function of Congress week took place on the Friday evening, when the President and Mrs. Callender held their reception and dance at the Guildhall, Cambridge. The very large company present included many of the most distinguished members of the profession, while equal pleasure was given by the number of young veterinary surgeons who, with their wives, made a point of meeting their President on this occasion. It is hardly necessary to say that Mr. Callender was, as ever, the most genial of hosts, while Mrs. Callender's gracious kindliness set the seal upon a particularly delightful evening. An excellent band provided dancing until 2 a.m., and during an interval the ever-versatile Dr. Pugh provided a cabaret in an adjoining hall.

ıe President and Mrs. Callender waiting to receive their guests.

. A. W. Stableforth, Director of the Ministry's Veterinary boratory, Weybridge, with Mrs. Stableforth, are greeted by the President and his wife.

Professor A. Robertson, Principal-elect of the Royal (Dick) School of Veterinary Studies, is welcomed.

Mrs. Callender with some of her youngest guests: left to right, Mrs. Graham Marr, Miss Weston, Miss Ingram and Miss Wooldridge.

Left to right: Mrs. Stableforth, Mr. Wallace, Mrs. Callender, Dr. Stableforth, the President, Dr. W. S. Gordon, Mrs. Ritchie and the Chief Veterinary Officer, Mr. J. N. Ritchie.

In a moment of relaxation Dr. W. R. Wooldridge (arrested by Mr. E. Wilkinson) is discussing the rigours of the veterinary life with Miss Uvarov.

Architect of Congress. By common consent Dr. P. Storie Pugh, seen here with Mrs. Pugh, was the moving spirit behind the brilliant organisation of this year's Congress.

Royal College of Veterinary Surgeons

ON June 5th of this year Council of the R.C.V.S. held what was described as a day of dedication and of celebration on the occasion of its Annual General Meeting. To mark R.C.V.S. Day, as it was called, a collection of documents, illustrating the development of veterinary medicine in this country and the history of the R.C.V.S., were exhibited in the Committee Room of the College. In view of the interest and importance of these documents, permission was kindly granted to a member of the VETERINARY RECORD staff to go through them and write this article on them.

The Odiham Agricultural Society

Although the veterinary art is, as the Register says, of great antiquity, the scientific teaching of veterinary medicine was a comparatively late development in Europe. The first veterinary college was founded at Lyons in 1761, but England was almost the last European country to follow the French example, and 24 years later the Minutes of the Odiham Agricultural Society recorded the Society's regret that veterinary medicine or farriery "a most useful science and intimately connected with the Interests of Agriculture . . . is in a very imperfect and neglected state . . . conducted without principles of science."

The credit of founding the first veterinary school in this country goes to the Odiham Agricultural Society. In 1788 they were planning to send 2 boys to be educated at the French veterinary school, but the scheme fell through for lack of money. There was, however, a clerk in the Colonial Office called Granville Penn, who took an active interest in the Society's plans; he wrote a number of letters to the *Gentleman's Magazine*, deploring the neglect of veterinary science in England, and he helped the Society to collect substantial funds. In 1790 the Society was resolving "that for the compleat establishment of Farriery on rational and scientific principles in this country such an Institution for Education in Farriery is necessary as has been established in France, Germany, Piedmont, Sweden, Denmark, etc.," and they appointed a Committee in London "for rendering the profession of Farriery more respectable to its professors and more useful to the Community, and to communicate to the Committee at Odiham, whatever may appear to be conducive to the views of the Society for promoting the Improvement of Farriery."

A few weeks before the French Revolution broke out, the director of the Lyons Veterinary School, Sainbel, feeling the first breath of the coming hurricane, left France to settle in England, and this was the opportunity the Odiham Agricultural Society had been waiting for. Sainbel was promptly made an honorary member, and in 1791 the Society published an announcement: "That from this day forward this Meeting shall be called the Veterinary College, London." The Duke of Northumberland was the first President and Sainbel the first Professor, at a salary of £100 a year.

The Royal Veterinary College

The College opened in Camden Town with 4 students. The course lasted 3 years, and discipline was rigorous. The students were to be in college by 8 o'clock and in bed by 11; alcohol in any form was absolutely forbidden; no improper language was allowed; no student was allowed to visit London, and any student spending a night out of college was instantly expelled.

Two years after his appointment Sainbel contracted glanders and died, and the knotty problem of filling his post arose. One of the Governors of the infant College was the great John Hunter, and Hunter's choice was a man called William Moorcroft, a brilliant scholar and experimentalist, who had also been trained at Lyons. But most unfortunately Hunter died within 2 months of Sainbel, and Moorcroft declined the proffered post. One of Hunter's colleagues put forward another name, that of Edward Coleman, and finally the College was forced into a compromise; Coleman was appointed resident Professor and Moorcroft was appointed in a consultative capacity, to lecture 3 days a week. But even this compromise arrangement broke down; partly because of the difficulty of combining the College with his own thriving practice in Oxford Street, and partly because of the difficulty of working with Coleman, Moorcroft remained at the College only 6 weeks.

Professor G. H. Wooldridge.—*Concluded.*

Number 4474, and a member of the London Staffordshire Chapter. He was also a member of the Supreme Grand Chapter (P.G.ST.B.). The advice and encouragement he so freely gave to others, and more especially to the younger men, was highly valued.

Throughout his long life in the profession he has been fortunate in having the constant support of Mrs. Wooldridge who in her quiet and charming way has endeared herself to a very large circle of friends both within and outside the profession. Generations of students know her as "Aunt Elsie," and a Veterinary College function without "Uncle George" and "Aunt Elsie" present seemed incomplete.

Although "Uncle George" and "Aunt Elsie" had no children of their own they had many true nephews and nieces, four of whom, Dr. W. R. Wooldridge, Messrs. Cyril and Neville King, and Mr. Arthur Shenton, are members of the profession.

We would like to extend the sincerest sympathies of all members of the British Veterinary Association to Mrs. Wooldridge in particular, and to the members of his family who survive him, in their sad loss.

Mrs. G. H. Wooldridge is greatly touched by the large number of letters of condolence she has received, and for the many tributes to her late husband which members of the profession have been kind enough to send her. Mrs. Wooldridge has asked us to thank all the writers on her behalf as she is sure members will understand if they do not receive a personal reply.

His departure left his co-professor a clear field. Edward Coleman has been described as scheming, grasping, selfish, jealous, and vindictive. He knew nothing of veterinary medicine; he had been trained as a doctor at St. Thomas's, and his sole qualifications for the post of Professor at the Veterinary College were that he had done a certain amount of work on horses' eyes and some experiments on dogs and cats. He arrived at the College announcing that he had come to learn and not teach, but this humility was short-lived; he soon managed to persuade the Governing Body of the College that the diseases of the horse were few and simple, and he scoffed at the idea of studying any animal but the horse. He once remarked that he could carry all the drugs necessary for veterinary medicine in his waistcoat pocket.

Under Sainbel's rule the College had admitted only students of good education, but Coleman found that these students saw too readily through his airy and often preposterous teaching, and he wanted no questions or criticism. The standard of education of the students fell sharply. Equally harmful to the profession was his scheme for supplying recruits to the Army, for to meet the urgent demand for veterinary surgeons he shortened the course from 3 years to 3 months, and it was said that the Army was disgraced by the men who were appointed from the Veterinary College. During the first half of the 19th century the College was little more than an obstinate drag on the profession, with all change fiercely opposed by its principals and all progress in veterinary science going on outside its walls. Veterinary surgeons were banned from the Board of Examiners, the lecture rooms and even from the list of subscribers, so determined was Coleman to keep its control in his own hands.

The Reformers

But as the profession outside the College grew in numbers and prestige so veterinarians' resentment of Coleman increased, and gradually the profession began to gather its forces. The names of the first reformers appear; Thomas Mayer and William Youatt founding the first Veterinary Medical Society for the improvement of the profession in 1813; the formidable William Dick opening his school in Edinburgh 10 years later, against Coleman's bitter opposition, and W. J. T. Morton, William Youatt, Joseph Goodwin, and Charles Spooner opening private school in London to teach the subjects of cattle pathology and chemistry that the College entirely neglected. The first 2 veterinary journals were published in 1828, the *Veterinarian*, edited by the Percivalls, father and son, and the *Hippiatrist*, edited by Bracy Clark and F. C. Cherry. Both immediately opened fire on the College, and 10 years later the big gun of the newly founded Royal Agricultural Society of England, with William Youatt on the Council, was trained upon it.

One of the chief exhibits on R.C.V.S. Day was a long Memorial, signed by 315 veterinarians, pointing out to the Governors of the College some of the profession's grievances. It is dated 1840, and the crossings out and rewriting are evidence of much earnest thought.

" This Memorial of the Undersigned Members of the Veterinary Profession humbly sheweth your Memorialists actuated by a desire to promote the reform of Veterinary Science . . . The Founders of the Veterinary College thought fit to select as essential to the education of the student first, and most important, the medical treatment of the diseases of Cattle. They, your Memorialists, regret that efficient measure have not been adhered to, and they beg leave to suggest the promotion or the appointment of some teacher who has lived and practised among cattle."

The Memorial goes on to say that the salaries of the Lecturers and the fees of the College were too low. " Means should be adopted which shall prevent from offending the public and bringing discredit on the Profession those who never intend to offer themselves for examination, but who will pay the present low fee, stay a few months at College, and then appear before the public as members of the London Veterinary College . . . No distinction at present exists with regard to the period of residence in the Veterinary College between the educated and the non-educated Student . . . If your Memorialists may be allowed to give an opinion upon this most important point they would suggest that all Students should be required to present indentures at their examination of their having spent 3 years with some regular Practitioner."

Indentures of Apprenticeship

(Mr. Henry Sumner, F.R.C.V.S., kindly lent the R.C.V.S. one of these Indentures, relating to his ancestor James Sumner.

" This Indenture made the first day of May one thousand eight hundred and eight between James Sumner . . . and Rodger Walton . . . the said James Sumner doth put, place and bind himself an Apprentice to the said Rodger Walton in his trade business science or profession of a Veterinary Surgeon or Farrier and him to serve from the day of the date hereof for and during and unto the full End and term of Seven years."

The Indenture laid down that the apprentice should neither embezzle the monies of his master nor play cards nor dice nor frequent alehouses or taverns. The veterinary surgeon for his part, undertook to teach veterinary surgery and during the said term to allow his apprentice sufficient meat, drink, and lodging.)

The R.C.V.S. copy of the Memorial is addressed to William Youatt by T. W. Mayer, the son of the Veterinary Society's founder and one of the great reformers; Youatt's reply is on the back:—

" The Professor of Cattle Pathology must be had . . . The Examiners must not be spared. Percivall here has struck the first blow. If fully successful you will do splendid work, and from the bottom of our hearts we wish you success."

Professor Dick was invited to sign the Memorial, but refused with asperity. " Being conductor of the School here," he wrote, " it would be improper to interfere with the manner of conducting a rival School . . . Contending as I do that the pupils of this School have at least all the privileges and advantages which are offered by the London School and at a fee of only Ten Guineas including their Diploma it would obviously be attempting to forward my own interest to get

the fees at London, which are already more than double, increased to triple the sum charged here."

The Charter

The Memorial was formally presented to the Governors of the College and equally formally turned down. The delegates who presented it also discussed with the Governors the necessity of a Royal Charter to embrace the whole profession, but this too was refused. Consequently, the signatories of the Memorial met and elected a Standing Committee of Veterinary Surgeons. This Committee met in the Imperial Hotel, Covent Garden, with Thos. Turner of Croydon in the Chair, and the Minutes of the first Meeting, dated November, 1840, record their determination to by-pass the College.

" That a petition be presented to the Privy Council praying for a Royal Charter conferring upon the Graduates of the London Veterinary College and the College of Edinburgh the title of the Royal College of Veterinary Surgeons, upon the same plan and constitution as the present Royal College of Surgeons."

But the negotiations for the Royal Charter were to prove a long and wearisome business. The first Petition failed. However, this petition shows the extent of the foothold which the Reformers had by now gained in the London College, for of its signatories—Thos. Turner, Joseph Goodwin, William Dick, T. W. Mayer, William Sewell, Charles Spooner, and J. B. Simonds—the last 3 were on the staff.

A second Petition was presented, and at the beginning of the year 1844 Mr. Turner reported to the Standing Committee that he had been endeavouring " by a continuous course of active exertion to obtain from Her Majesty's Government that Charter which it was fondly hoped would prove a real blessing to veterinary science."

" It would be trespassing on your time too much to enter into details by recounting the obstacles that have been surmounted or the interviews that have taken place with those in authority," said Mr. Turner, " for the path we have taken has not been smooth or free from danger. Soon the labours of your Committee must cease, and when called upon to surrender their trust they feel convinced that their exertions will meet with your approval."

The R.C.V.S.

The Charter of the Royal College of Veterinary Surgeons was granted in February, 1844. " The Chairman opened the meeting with an appropriate address in which he congratulated the Members on the important object that had been obtained, and which he had no doubt would materially accelerate the onward progress of Veterinary Science."

But the infancy of the R.C.V.S. was almost as troubled as that of the London College. Hardly had the Charter been signed than Professor Dick was objecting to it, claiming that it had been altered since he signed the petition, and the alterations would weaken the position of his school. The Governors and Professor of the London College promptly raised a similar complaint on behalf of their own College, and the R.C.V.S. found itself in the disconcerting position of a besieged city whose citizens are doing their best to overthrow the defences from within. Spooner, Simonds, Sewell, and Morton joined in the London College's protest, and as the first 3 were all Presidents of the R.C.V.S. at different times, their power to shake the defences was considerable.

The London College, incredibly, addressed a petition to the Secretary of State, appealing against the Charter and professing perfect ignorance of that which they themselves had helped to create. " To the surprise of your Petitioners," they wrote, " Her Majesty had been induced in accordance to the Petition of certain Veterinary Surgeons holding Certificates from this and the Edinburgh College creating them into a Corporation by the Title of the Royal College of Veterinary Surgeons. That the Petitioners for such Charter in no way represent the President, Vice President, Trustees, or Subscribers to this College and their Petition was presented and the Charter therefore obtained without the knowledge or consent of your Petitioners."

Council of the R.C.V.S., in reply, pointed out that throughout the Charter negotiations the Solicitor of the Veterinary College had been present.

" There was no understanding, express or implied," wrote Council, " that besides submitting the Draft Charter to the Solicitor of the Royal Veterinary College of London it should be submitted to the Governors, Professors, and Assistant Professors of that College, it being understood that whatever communications were to be made to that College should be made by Mr. France, their Solicitor . . . The Veterinary Profession were given to understand by Mr. France that the Governors of the College were perfectly aware of the movements of the Veterinary Profession."

The R.C.V.S. weathered this storm, but in 1849 they were shaken by another salvo from Edinburgh.

" Having endeavoured with the best of my abilities to bring the Council of the R.C.V.S. to a right way of thinking and acting without success," wrote Professor Dick, " and finding that the Charter, instead of producing means of increasing and diffusing a better knowledge of Veterinary Science has heretofore seemed only to give rise to feelings of the worst kind and tended to injure and degrade it, I resolved and have for a considerable time given up concerning myself about the matter . . . You are aware that the strife did not *arise* with me; I only acted on the defensive, and in doing so showed that the course the Council had taken tended to degrade the profession not to raise it—they appointed an inferior Board of Examiners, they *changed* and *limited* the course of study and did not improve it . . . Under the Circumstances I am quite regardless as to what steps Council may adopt as I am perfectly at my ease under the present arrangement."

Council

In spite of its many troubles, however, the R.C.V.S. lost no time in getting to work. The election of the 29 members of Council had been its first move, and Council met for the first time on April 15th, 1844. Professor Dick; William Field (Moorcroft's successor in Oxford Street); Joseph Goodwin; the Mayers, father and son; the Percivalls, father and son; Professor Sewell; Charles Spooner; and J. B. Simonds were among its members.

Rules for membership were drawn up. "No person shall be admitted M.R.C.V.S. after January 1st, 1948, who has not served an apprenticeship of 3 years to some Member of the College in regular practice . . . Every candidate presenting himself for examination must produce certificates to the following effect, *viz.*, of being able to take off and put on a shoe, to drive the nails skilfully, to pare out a foot and search for its diseases." A list of qualified veterinary surgeons were compiled, with the help of known members, who were each sent a questionnaire. "Do you know of the Death of any M.R.C.V.S. that has taken place recently or within Ten Years? Are there in your Neighbourhood any Persons calling themselves 'Veterinary Surgeons' who have not received a Diploma? Whether such Persons (if any) have ever studied at either of the College of London or Edinburgh, or have been brought up from their Youth in the Practice of Farriery?" And the first examinations for the diploma of M.R.C.V.S. were held.

The first pages of the examination book are headed by 2 illustrious names: Professor Morton, who voluntarily submitted himself for examination, and William Youatt. For when Youatt—one of the chief architects of the R.C.V.S. and a "gentle, amiable man, of great benevolence and humanity . . . a pioneer of the veterinary art, whose name is written in letters of gold upon the tablets of his profession"—arrived to attend the first Annual Meeting of the profession he was refused admittance. In the early days of the London College he had been one of the prime objects of Coleman's dislike, and he had been forced out before he could take its diploma. He was not officially qualified, therefore, and could not expect to attend the meetings of that body which was so greatly in his debt. And the gentle Youatt immediately agreed with this ungracious decision, and submitted himself for the R.C.V.S. examination.

The First Register

The first Register of the R.C.V.S. was printed in 1848, and listed 1,046 names, but to 21 of these the word "dead" was added. There were then 6 members in Australia, 1 in Canada, 1 in Mexico, and 1, given briefly, as W. McIntosh, Surgeon, North America.

100 Years Ago

The Proceedings of Council of 100 years ago show that peace had not yet been attained.

"In Conclusion, the Council regret that another year has passed without the veterinary profession having become that united body which was so fondly anticipated on the obtainment of the Charter. May the question be asked, for the last time, whose fault that has been? And may it be replaced by this—How can it now be accomplished? If party views are abolished, if personal differences are laid aside, and if the one great and good object, the advancement of our profession, is steadfastly and disinterestedly kept in view, no power on earth can prevent its accomplishment; and we might then hope to hail the approach of the period when it shall be considered

R.C.V.S.—*Concluded.*

an honour to become a member of the Royal College of Veterinary Surgeons."*

To-day, when the membership of the R.C.V.S. is near 6,000, and the profession can look back upon a great and solid structure of achievement, it is appropriate to look back to the early reformers, the men who laid the foundations on which the structure has been built. For it is due, in the first place, to them—to William Youatt, the Mayers and the Percivalls, to Thos. Turner, Professor Dick, Joseph Goodwin, and the other reformers—that to-day it may justly be considered an honour to become a member of the Royal College of Veterinary Surgeons.

RACHEL GIBB.

* Here the documents ended.

THE COMMONWEALTH FUND FELLOWSHIPS, 1958

Commonwealth Fund Fellowships available to British subjects for study and travel in the United States of America were inaugurated in 1925 by the Commonwealth Fund of New York, a philanthropic foundation endowed by the late Mrs. Stephen V. Harkness and the late Mr. and Mrs. Edward S. Harkness. The Fellowships are under the patronage of Her Majesty the Queen.

In the British Programme there are 6 categories of Fellowships, each open to British subjects (men and women) who are not normally resident in or near the Americas and who have not previously worked or studied for more than a few months in the United States. The Fellowships provide for all expenses of travel, study, and living. The Fund cannot accept responsibility for Fellows' wives or their families, but some adjustment of Fellowship stipends is made to enable married men to become candidates.

General. Twenty Fellowships are offered to degree graduates of a university in the United Kingdom of Great Britain and Northern Ireland. Candidates must be available in London for interview in March, 1958. Age: 23 to 32. Tenure: 12 to 21 months. Closing date of applications: *December 16th, 1957.* (This category was established in 1925.)

Home Civil Service. Five Fellowships are offered to permanent members in the higher ranks of the Civil Service in Great Britain; 3 for the administrative grades and 2 for the scientific and professional grades. Age: preferably under 40. Tenure: 9 to 15 months. Closing date of applications: *December 10th, 1957,* to the treasury. (This category was established in 1937.)

Australian and New Zealand Civil Services. Five Fellowships are offered to civil servants in the Governments of Australia and New Zealand. Age: under 40. Tenure: 9 to 15 months. Closing date of applications: *November 1st, 1957.* Australian applications to Dr. H. Carlyle Forster, Box 4079, Melbourne; New Zealand applications to the Public Service Commission, Wellington. Awards made by the Fund through Nomination Committees in the Dominions. (This category was established in 1929.)

Oversea Civil Service. Two Fellowships are offered to civil servants in the Governments of British

Colonies, Protectorates, and Trust Territories. Age: under 40. Tenure: 9 to 15 months. Closing date of applications: *November 17th, 1957.* to the Colonial Office, London. (This category was established in 1950.)

American Studies. Four Fellowships will be available to faculty members appointed to or holding posts in American studies in universities in the United Kingdom; candidates to be nominated by their universities. Tenure: 4 to 15 months. These Fellowships are not limited by previous study in the United States. (This category was established in 1952.)

Conditions of eligibility, award, and tenure and the emoluments offered for each category of the Fellowships are published in separate memoranda. Applications should be submitted on the prescribed form. The appropriate memorandum with application form attached may be obtained through British universities or through Government departments, or from The Warden, Harkness House, 35, Portman Square, London, W.1.

The information contained in the current Announcement and Memoranda relate only to Commonwealth Fund Fellowships awarded in 1958. This is the last year of the present series of awards in the Fund's British Programme. In 1959 and thereafter the present categories will be merged into one Fellowship programme, which will be known as The Harkness Fellowships of the Commonwealth Fund. Present regulations concerning eligibility and tenure will be amended, but the total number of awards will not be reduced and most candidates eligible under existing arrangements will be included. Candidates who had intended to base future applications on information contained in current memoranda are advised to apply for the revised regulations, in September, 1958, to the Warden of Harkness House *at the Fund's new London address (after November 1st, 1957): 38, Upper Brook Street, London, W.1.*

In elections to the Fellowships the Committee of Award will take account of character, personality, and competence, having primary regard to intellectual ability and to actual and potential achievement. The Committee of Award and the Fund must be satisfied that the candidate's proposed programme of study, research, or enquiries can be advantageously pursued in the United States.

Selection will be determined by the applicant's record; his written statement of purpose and programme of study, enquiries and travel in the United States; medical examination; and interview of selected candidates for General and Home Civil Service.

The Committee of Award will consist of: *Chairman*—Sir Keith Murray, PH.D., *Chairman, University Grants Committee*; The Rt. Hon. Sir Oliver Franks, G.C.M.G., K.C.B., C.B.E., *Chairman, Lloyds Bank, Ltd.*; Noel G. Annan, O.B.E., *Provost of King's College, Cambridge*; Sir Eric Ashby, D.SC., *President and Vice-Chancellor, The Queen's University, Belfast*; F. W. D. Deakin, D.S.O., M.A., *Warden of St. Antony's College, Oxford*; Sir Geoffrey Crowther, LL.D., D.SC. (ECON.), *Managing Director, The Economist*; R. P. Linstead, C.B.E., F.R.S., *Rector, Imperial College of Science and Technology.*

BIOLOGICAL PRODUCTIVITY OF BRITAIN

A symposium on the Biological Productivity of Britain will be held, by kind permission, in the Lecture Hall of the Royal Geographical Society, Kensington Gore, London, S.W.7, on October 4th and 5th, 1957.

The symposium will be opened by the Rt. Hon. Lord St. Aldwyn, Parliamentary Secretary to the Ministry of Agriculture, Fisheries and Food, at 10 a.m. on October 4th, and Professor H. D. Kay, C.B.E., F.R.S., will be in the Chair. The programme will be as follows:—

The land-use pattern of Britain, *Professor L. Dudley Stamp* (London School of Economics); The recent history of land-use, *Dr. G. P. Wibberley* (Wye College, Ashford, Kent); Factors limiting production, Dr. D. J. Watson (Rothamsted Experimental Station); Discussion. 12.45 p.m., Lunch. 2.0 p.m. *Chairman*: F. C. Bawden, F.R.S. Present agricultural production, *Dr. H. G. Sanders* (Ministry of Agriculture); Improvements in crop production, *Dr. G. D. H. Bell* (Plant Breeding Institute, Cambridge); The expansion of animal production, *Professor M. M. Cooper* (King's College, Newcastle); Discussion. 4.45 p.m. Tea.

October 5th, 1957. 10.0 a.m. *Chairman*: E. M. Nicholson, C.B. Primary production in inland waters, *Dr. J. W. G. Lund* (Freshwater Biological Assn., Windermere); The production of fish in fresh waters, *E. D. Le Cren* (Freshwater Biological Assn., Windermere); The present productivity of forests, *M. V. Laurie* (Forestry Research Station, Farnham); Some biological considerations in forest production, *Dr. J. D. Ovington* (Merlewood Research Station, Nature Conservancy). Discussion. 12.45 p.m. Lunch. 2.0 p.m. *Chairman*: Professor W. H. Pearsall, F.R.S. Water control for increased crop production, *Dr. H. L. Penman* (Rothamsted Experimental Station); The future of British uplands, *Professor J. B. Cragg* (University of Durham); Unconventional production of foodstuffs, *N. W. Pirie*, F.R.S. (Rothamsted Experimental Station). Discussion. 4.45 p.m. Tea.

Attendance at the symposium is open, without charge, to Members of the Institute of Biology and to Fellows of the Royal Geographical Society *who should apply for tickets.* Those who are not members of the two bodies will be welcome: tickets, price £1 1s., can be obtained on application, and the fee includes attendance, teas and pre-prints of the papers. Students who wish to attend and who are not members of the Institute will find it advantageous to become Student Members: the subscription is 5s. per annum.

There will be ample time for discussion at each session: those who make major contributions *are asked to supply, by October 14th, a written account of their remarks* for inclusion in the printed report of the symposium which will be available in 1958.

Those wishing to order tickets and lunches should do so on the appropriate form which can be obtained from the Institute of Biology, 41 Queen's Gate, London, S.W.7.

News and Comment

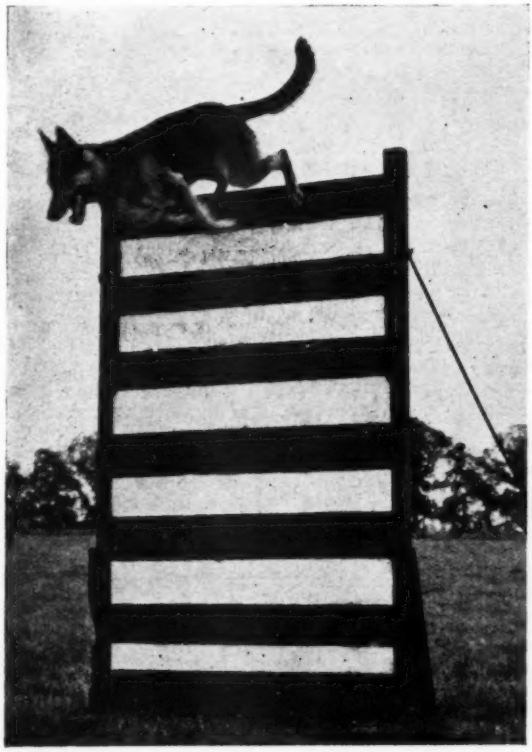
MEMBERSHIP OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The Royal College of Veterinary Surgeons has been elected to corporate membership of the British Association for the Advancement of Science, and is represented at the meeting in Dublin by 5 members: Mr. J. A. Flynn, Chief Veterinary Officer of the Dublin County Council; Professor P. A. McGeady, Professor P. E. Mullaney, and Professor J. A. Nicholson of the Veterinary College of Ireland; and Professor A. F. O'Dea, Registrar of the Veterinary Council of Ireland.

AN R.A.V.C. DISPLAY

A novel and most interesting item of the Congress programme, was the display given on the Friday afternoon by war dogs and their R.A.V.C. handlers. It took place at the School of Veterinary Studies, and a large audience watched with close interest the obedience, guard, assault and other routines to which the dogs had been perfectly trained. It was abundantly clear that a very great amount of painstaking work had gone into the training of the dogs which, the audience was told during a running commentary, were just about to be issued to military units. The upper photograph shows the parade of handlers and dogs which opened the display, and the lower shows one of the dogs in action.

In all, a first-class show which reflected the highest credit upon the Corps.



CONGRESS GOLF COMPETITION

Mrs. Sandercock won the Ladies' Event of the Congress Golf Competition, and Mr. C. M. Ferguson and Mr. G. W. Serth came first and second, respectively, in the Men's Event. The Congress was greatly indebted to the Gog and Magog Golf Club for the facilities they were good enough to make available to members of the Association. This social event was duly noted by the local Press who have kindly allowed us to reproduce the cartoon below.

The British Veterinary Association, holding its Annual Congress in CAMBRIDGE, arranged a Golf match at the Gogs for its members
Real Pig of a course!
You could'nt have knocked him colder with a hypodermic needle!
- and Veterinary Surgeons agreed that it wasn't the Golf
FOR - CEPTS!
Must you cut up EVERYTHING?
- they enjoyed so much as the
YAKITY - YAKITY - YAK
CLUB HOUSE
POST MORTEMS
AFTERWARDS!
LEWIS 57

The Officers of the Association 1956-7 with their ladies. Left to right: Mr. and Mrs. Bywater, Mr. and Mrs. Ingram, the President and Mrs. Callender, Mr. and Mrs. Wilkinson, and Mr. and Mrs. Oliver.

POULTRY STOCK IMPROVEMENT ADVISORY COMMITTEE

The Minister of Agriculture, Fisheries and Food has decided that the Poultry (Stock Improvement) Advisory Committee should continue with its original terms of reference, until further notice, under the chairmanship of Mr. H. Hardman, C.B.

The committee was originally constituted in January 1945, and its present term of office expires at the end of the month. The committee, which includes a representative of the British Veterinary Association, has been concerned mainly with the development and administration of the Poultry Stock Improvement Plan including the poultry progeny testing scheme.

APPROVED CHEMICAL AGENTS FOR THE CLEANSING OF DAIRY EQUIPMENT

Approval has been given by the Minister of Agriculture, Fisheries and Food under the Milk and Dairies Regulations, 1949/54 for the use of the undermentioned products as oxidising or preservative agents in the cleansing of dairy equipment:—

"Delsanex Q.A.," Delsanex Ltd., Fenner Works, Great Yarmouth. Super Kinray "Q," Reddish Chemical Co. Ltd., Globe Works, Reddish, Stockport.

DR. STABLEFORTH'S VISIT TO BAGHDAD PACT COUNTRIES

At the request of the Foreign Office, Dr. Stableforth visited the Baghdad Pact countries during July and August of this year. The Working Party met at Istanbul from August 5th to 10th. They held 7 meetings and, as requested by the Economic Committee, carried out a survey and assessment of the present position, future demand and the potential for the production, supply and interchange of biologics in the Pact Region countries together with possibilities for expansion of production and research methods and facilities needed. Requests were made for grants to train personnel, and Iran, Iraq and Turkey made special requests for the services of experts. It was hoped that the costs could be met from the Baghdad Pact funds.

CORRECTION

On page 861 of last week's issue "Sunshine" was wrongly identified as Mr. Beaumont. We apologise to Mr. Bowman for this error which was caused by a mistake in the reporter's notes.

INTERNATIONAL CONFERENCE ON RADIO-ISOTOPES IN SCIENTIFIC RESEARCH

Mr. J. L. McGirr is attending the U.N.E.S.C.O. International Conference on Radio-Isotopes in Scientific Research which is being held in Paris from September 9th to 20th, 1957. The main subject matter of the Conference is divided into two parts—one dealing with the Physical Sciences and the other with the Biological Sciences.

R.C.V.S. OBITUARY

We record with regret the death of the following member of the profession:—

McGUIRE, B. A., O.B.E., 24, Links Side, Enfield, Middlesex, Capt. late R.A.V.C. Graduated December 16, 1905, Royal Veterinary College, London. Died August 21st, 1957.

PERSONAL

Marriage

KETTLES—BALFOUR.—At St. Drostan's, Markinch, on September 7th, 1957, by Rev. E. M. M. Davidson, Andrew S. Kettles, B.SC., M.R.C.V.S., only son of Mr. and Mrs. G. Kettles, Westport Place, Cupar, to Christina T. Balfour, only daughter of Mr. and Mrs. R. P. Balfour, Balgonie Place, Markinch.

Mrs. Ruth Allcroft attended the O.E.E.C.—E.P.A. Seminar on Diseases in Cattle and Sheep at Pasture which was held in Utrecht from September 2nd to 11th, 1957. She was invited to be a guest speaker and rapporteur for the section on mineral deficiencies.

COMING EVENTS

September

15th (Sun.). Annual General Meeting of the Veterinary Section of UFAW at Westham House, Barford, Nr. Warwick, 2 p.m.

25th (Wed.). Meeting of the Midland Region of the British Small-Animals Veterinary Association at the White Lion Hotel, Banbury, Oxon, 2.30 p.m.

Meeting of the Lancashire Veterinary Association at the University Veterinary Hospital, Liverpool, 2.30 p.m.

General Meeting of the Society of Practising Veterinary Surgeons in, or about, Exeter.

27th (Fri.). Meeting of the North Wales Division at the Department of Agricultural Chemistry, School of Agriculture, U.C.N.W., Deiniol Road, Bangor, 2 p.m.

October

3rd (Thurs.). General Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, N.W.1, 5.30 p.m.

Autumn Meeting of the North of Scotland Division in the Gordon Arms Hotel, Elgin, 2.30 p.m.

9th (Wed.). Autumn Meeting of the Society of Women Veterinary Surgeons at the Veterinary Investigation Centre, Coley Park, Reading, 11.30 a.m.

10th (Thurs.). Ordinary Meeting of the Ayrshire Veterinary Association in the Ailsa Lounge, Station Hotel, Ayr, 2.30 p.m.

11th (Fri.). Annual Dinner and Dance of the Royal Counties Veterinary Association at the Randolph Hotel, Oxford, 7.30 p.m.

18th (Fri.). Annual Dinner Dance of the South Wales Division at the Seabank Hotel, Porthcawl.

FOOT-AND-MOUTH DISEASE

The area described in the schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease:—

The County Boroughs of Darlington and Middlesbrough.

IN THE COUNTY OF DURHAM

The Borough of Stockton-on-Tees.

In the Petty Sessional Division of Stockton County: The parishes of Newsham, Aislaby, Egglescliffe, Preston-on-Tees, Longnewton, Elton, East and West Newbiggin, Little Stainton, Bishopton, Redmarshall, Carlton, Norton, Great Stainton, Stillington, Elstob, Whitton, Foxton and Shotton, Grindon and Billingham.

In the Petty Sessional Division of Darlington County: The parishes of Sockburn, Low Dinsdale, Neasham, Hurworth, Blackwell, Middleton St. George, Morton Palms, Sadberge, Great Burdon, Barmpton, Brafferton, Preston le Skerne, Coatham Mundeville, Whessoe, Archdeacon Newton and Low Coniscliffe.

IN THE COUNTY OF THE NORTH RIDING OF YORKSHIRE

The Borough of Thornaby-on-Tees.

The Petty Sessional Divisions of Thornaby and Yarm and Langbaurgh North.

In the Petty Sessional Division of Gilling East: The parishes of Manfield, Cleasby, Stapleton, Newton Morrell, Barton, Croft, Dalton upon Tees, Eryholme, East Cowton, North Cowton, South Cowton, Danby Wiske and Whitwell and so much of the parishes of Scorton, Uckerby, Moulton and Middleton Tyas as lies to the east of the road running from Bolton upon Swale via Scorton, Uckerby, Moulton, Middleton Tyas and Low Hangbank to Piercebridge including the said road.

In the Petty Sessional Division of Allertonshire: The parishes of Great Smeaton, Hornby, Appleton Wiske, Sowerby under Cotcliffe, West Rounton, Little Smeaton, Deighton, Welbury, Birkby, Hutton Bonville, Lazenby, Brompton, Northallerton, Winton Stank and Hallikeld and West Harlsey and so much of the parishes of Thimbleby, Osmotherley, Ellerbeck and East Harlsey as lies to the west of the main road running from Thirsk to Stokesley, excluding the said road.

In the Petty Sessional Division of Langbaurgh West: The parishes of Nunthorpe, Newby, Seamer, Rudby, Skutterskelfe, Hutton Rudby, Potto and Sexhow and so much of the parishes of Ingleby Arncliffe, Whorlton, Faceby, Carlton, Little Busby, Great Busby, Kirby, Stokesley, Braughton and Great Ayton as lies to the north and west of the main road running from Thirsk via Stokesley and Great Ayton to Guisborough, excluding the said road.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Sussex. Orltons Farm, Rusper, Horsham (Sept. 3rd).
Yorkshire. Highfield Farm, Denton, Ilkley (Sept. 4th).

Fowl Pest

Essex. Floradean, Lodge Lane, Collier Row, Romford (Sept. 4th).
Kent. The Shack, Hempstead Road, Hempstead, Gillingham (Sept. 4th).
Lancashire. Myrtle Cottage, Hall Lane, Longton, Preston (Sept. 3rd); Outlane Farm, Liverpool New Road, Much Hoole, Preston (Sept. 4th); Coe Lane Poultry Farm, Freckleton, Preston (Sept. 5th).

Swine Fever

Berkshire. Wurmstall Estate, Wickham, Newbury (Sept. 6th).

Buckinghamshire. Park Farm, Fawley; Apple Orchard, Clay Lane, Bookhurst, Marlow (Sept. 2nd).

Cheshire. Dam Head Farm, Mobberley, Knutsford (Sept. 9th).

Denbigh. Plas-yn-dre Dairies, Station Road, Llanrwst (Sept. 6th).

Derbyshire. Highfield Hall Farm, Stonegravels, Chesterfield (Sept. 2nd).

Dorset. East Farm, Bucklands Ripers, Weymouth (Sept. 2nd); Rectory Farm, Winterbourne Zelstone, Blandford Forum (Sept. 6th).

Gloucestershire. Church Farm, Charfield, Gloucester (Sept. 4th).

Hampshire. Southwood Farm, Iyley Lane, Cove, Farnborough; H.M.S. Dryad, Pig Farm, Southwick (Sept. 2nd); Wildmoor Farm, Sherfield on Loddon, Basingstoke (Sept. 6).

Kent. Hale Place Farm, East Peckham, Tonbridge (Aug. 30th); Old Mill Farm, Hollingbourne, Maidstone (Sept. 2nd); Tanyard Farm, Lenham, Maidstone (Sept. 5th); Copt Hall, Shoreham, Sevenoaks (Sept. 6th).

Notts. Mill Farm, Blyth, Worksop (Sept. 9th).

Oxfordshire. Old Farm House, Black Bourton (Sept. 2nd); Parsonage Farm, Marsh Baldon (Aug. 29th).

Staffs. Crook House Farm, Pinfold Lane, Barr Beacon, Walsall (Sept. 5th).

Warwicks. Fosse Farm, Fosse Way, Stretton on Dunsmore, Rugby (Aug. 30th); Barnwells Barn Farm, London Road, Thurlaston, Rugby (Sept. 4th).

Wilts. Donhead House Farm, Donhead St. Andrews, Shaftesbury (Sept. 4th).

Worcs. Oaklands, Callow Hill, Rock, Kidderminster (Sept. 3rd).

Yorks. South Dene, Brandesburton (Aug. 30th); White House Farm, Holmfield, Halifax (Sept. 3rd).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

A Scale of Professional Fees

Sir,—It would be a sorry state of affairs if anyone were so devoid of friends as to be unable to be told the truth at times, however unpalatable. If doubts are cast on the veracity of the annual mileage claimed by one colleague, are we to regard as other than an attempt at burlesque, the manner in which another states he carries out tuberculin testing and dehorning?

However, nobody should mind criticism. I have always thriven on it, in all spheres of human endeavour. Well do I recollect being informed in your columns, and by word of mouth, that (a), if I retracted the bovine uterus in dealing with infertility, complete prolapse would inevitably follow; (b), the experience which would follow the treatment of milk fever when calcium gluconate was introduced and before boric acid was added, were due to faulty technique; (c), in alleging that artificial foods might cause canine hysteria, I had chosen the "wrong tree."

The question of fees, like the poor, has been with us a long time. If a *maximum* and *minimum* scale is adopted, then any breach for the sole purpose of undercutting a colleague, after due investigation by the B.V.A., must be referred to the appropriate committee of the R.C.V.S. There is no other way to guarantee some adherence. As one who co-operated in the now defunct survey scheme, my experience was that the majority of patrons of it were those well able to pay a good fee and in a position at any time to call in a veterinary surgeon. In my view, these should have been debarred, but one had to enrol them, or someone else would have done so.

In conclusion, might I suggest that the veterinary press receives the *first* information of new lines of treatment, and not *after*, or at the same time, as the lay one.

Yours faithfully,
J. F. D. TUTT.

"Rothiemurchus,"
St. Cross, Winchester.
August 13th, 1957

Sir,—I recently called in the suppliers to a faulty portable X-ray unit. The fault was found to be a "blown" 5 amp. fuse in the wall-plug which I replaced myself.

I received an account for £7 6s. 3d. which I asked to have itemised, and the following details might be of interest to your readers when considering any new scale of professional fees.

Two Visits

	£	s.	d.
3½ hours working time	2	19	6
3½ hours travel time	2	19	6
Travel expenses		6	1
Living expenses		4	11
1.AB.800 gallon "G" Oil		11	9
1.01–003 tube covergasket		4	6
	7	6	3

Yours faithfully,
J. ADAMSON.

96, Castle Street,
Haulgh,
Bolton.
August 20th, 1957.

I am afraid that I do not quite understand the logic of Mr. Beaton's argument in his letter of August 17th. Presumably he considers it *infra dig.* that the veterinary fees should be quoted at a lower rate than those of the blacksmith. Let him remember that the average healthy racehorse has little need of veterinary attention. Indeed those of us engaged in racehorse practice would welcome an annual fee of 52 guineas for each horse in our district, or even half of that.

From an analysis of past accounts it is striking that despite a considerable increase in gross turnover since pre-war days, many of the basic professional charges have altered little, and in some cases not at all. Increases are due in part to a greater demand for veterinary services, and in the main to the ever-rocketing prices of drugs and transport. Whilst improvements in practice organisation and increased efficiency in the use and purchase of drugs can help to remedy this situation, the point is eventually reached where the increase of basic charges is unavoidable.

In view of this it would be extremely helpful if one had some yardstick by which to measure one's own practice fees and internal economics. Could not the B.V.A. send out to practitioners a simple

questionaire on charges? These could then be confidentially collated and averaged out; the resultant facts being circulated, possibly in *The Supplement*.

Yours faithfully,
C. J. FRANK.

Letcombe House,
Letcombe Regis,
Nr. Wantage, Berks.
August 17th, 1957

Anthrax in Dogs

Sir,—The recording of an outbreak of anthrax in a hound kennel in your August 17th issue prompts us to comment on the source of such an infection in dogs. In November, 1955, Mr. W. E. Fletcher, M.R.C.V.S., of Newry, Co. Down, brought to our notice and for confirmation an outbreak of anthrax in foxhounds at a nearby kennel. The disease was confirmed at *post mortem* and by culture, and the source was almost certain to have been raw cow beef from a local knackery.

Three adult hounds died 4 days after receiving the meat, symptoms of dullness and depression being seen and death occurring after 3 to 12 hours. Head symptoms were not observed.

A laboratory survey of the knackery was carried out from February, 1956, and continued for 4 months. All gutted and intact bovine carcases were subjected to a routine swab anthrax examination and 2 employees of the firm were trained to diagnose anthrax in this way.

Within the first 3 weeks 499 carcases had been examined and *five* were anthrax positive, *i.e.* a 1 per cent. incidence during the period. This was a higher number of cases than had been diagnosed by the Ministry on carcases reported to be suspect during the previous 12 months.

The positives in the knackery were " short lived " however and no further case was found in the next 2,000 examined. The potential leakage of positive carcases, nevertheless, was all too real and steps were taken to make carcase examination compulsory and to deal with positive material more effectively than before. We hesitate to consider what percentage of knacker carcases must have been positive during the high incidence year of 1951.

Yours faithfully,
J. K. L. PEARSON.

Veterinary Research Division,
The Farm,
Stormont,
Belfast.

E. CONN.

Parliamentary Buildings,
Stormont,
Belfast.
August 20th, 1957.

Doctor Griffith Evans

Sir,—If the following question were asked at a Brains Trust, "Name the scientist who discovered the first pathogenic trypanosome and who also proved that trypanosomes were the cause of some of the most serious diseases in India, Africa and other tropical countries," it is doubtful if anyone except members of the veterinary or medical professions could give the correct answer.

Some time ago I read a book published in the U.S.A. giving the names of scientists who had investigated and discovered the cause of tropical diseases. I was surprised that the name of Dr. Griffith Evans—a pioneer of tropical medicine—was not even mentioned. Often we hear about how the Americans succeeded in constructing the Panama Canal after the French engineers were compelled to abandon the work on account of malaria fever. Had Sir Ronald Ross discovered the cause of this terrible fever at that time, the French would have completed the Canal by taking the necessary precautions, such as drainage of the surrounding swamps, using mosquito curtains, etc. etc. Yet the Americans take all the glory without mention of the name of Ross. As an old pupil of his at the Liverpool Tropical School, the writer has on several occasions called attention through the Venezuelan Press when hearing that the Americans succeeded in doing the work which the French had failed. I believe in the old adage "Honour where honour is due."

The following letter, which the writer received from Dr. Griffith Evans, may interest the readers of THE VETERINARY RECORD as well as serve to keep it in print. Confucius said, "The faintest ink is more powerful than the strongest memory."

Brynkynallt,
Bangor, N. Wales,
27 Feby. 1919.

Dear Mr. Morgan,

I thank you for your very kind letter dated 25th ult. and the friendliness of your communication to "Y Brython." The recent public recognition of my bit of help to pathologists came as a series of surprises to me. First, the Mary Kingsley Medal presented by the Liverpool University and School of Tropical Medicine at a special meeting of the NW. branch of the British Medical Association convened for the purpose; second, the R.C.V.S. Steel Medal which the Secretary informed me is the highest honour they can confer, and third, the University of Wales Council unanimously passing me for the honorary degree D.Sc. at the next convocation. I never expected anything of the kind, and had been long ago fully satisfied by the acknowledgments of authorities in tropical pathology, German, French, and English.

If I deserve any credit it is not for merely finding the trypan, as if by chance; it is for expressing my opinion officially, after reading reports of the disease by others, that Surra was caused by some pathogenic microbe in the blood, and my refusal to go to investigate the disease unless I was officially authorised to make whatever experiments I might think necessary to decide the question at issue. I was then the only medical man in India who officially maintained that some microbes were pathogenic. The official authorities were strongly against me on that account, advising the Government I was wrong, and they controverted the deductions I made from my experiments with Surra. I had my satisfaction when their successors in office fully acknowledged the correctness of my

reports, my observations and deductions. Laboratories were soon established by Government at the chief centres of India for the study of pathogenic microbes.

Of course, I am greatly gratified by the unexpected showers of honours bestowed upon me in my old age (84 next August) and wish I were young again to do more for it.

If I survive until you return to "yr hen wlad" I hope for the pleasure of seeing you.

Yr eiddoch,
Griffith Evans.

Yours faithfully,
EDWARD MORGAN.

Guataparo,
Valencia,
Venezuela.
August 31st, 1957.

Advertisements in the "Appointments Vacant" Column

Sir,—Having scanned the "Appointments Vacant" column for more years now than I care to remember, I find that only a small number of advertisers when stating a definite salary along with the offer of accommodation make it clear whether the accommodation is free or otherwise in addition to the stated salary.

An example of an advertisement which leaves no doubt on this point appears in THE RECORD dated August 17th and begins, "First-class modern compact house free of charge plus £700 to £900 per year . . ."

Since salaries offered in advertisements seem to be the only available indication of the trend in assistants' salaries it is important that there should be no doubt about the total amount offered.

Might I suggest that where accommodation is offered, all doubt would be removed if it were made a condition of acceptance that in all advertisements offering a stated salary and accommodation, the value of the accommodation should be additional to the stated salary unless the advertiser, by the wording of the advertisement, made it clear that this was not the case?

Yours faithfully,
ROBERT S. MOIR.

St. Margarets,
Eaglesfield,
Lockerbie,
Dumfriesshire.
September 2nd, 1957.

Treatment of Bovine Parasitic Bronchitis

Sir,—At a time when numerous trials are being conducted on the efficacy of cyanacethydrazide as an expellent of lungworms, it seems opportune to remind ourselves that these are ultimately directed towards the alleviation of the disease which the parasites cause in the host body under conditions of natural infection.

In the case of *Dictyocaulus viviparus* in cattle under natural field conditions observations show that neither clinical signs nor faeces larval counts taken together or separately, necessarily indicate the degree of actual infection with adult lungworms. To attain a better assessment of the extent of lungworm infection one requires to obtain an indication of the degree of larval uptake. Thus field trials of a lungworm anthelmintic must be made on naturally infected cattle on herbage the larval levels of which have been estimated prior to the onset, and during the course, of clinical signs; one can only then begin to appreciate the existence of the individual animal's natural resistance, and from all the data obtained reach a more accurate assessment of the anthelmintic.

The serial pathology of experimentally induced bovine hoose by the Glasgow workers clearly demonstrates the rôle of the lungworm as an instigator of the so-called pulmonary "vicious circle." Field studies have also borne out this conclusion. The mere removal of the lungworms after the onset of pulmonary oedema will not bring about the elimination of the oedema; it may not even prevent hyaline membrane formation with consequent dyspnoea etc.

If a lungworm expellent proves successful one is still faced with the problems of adjusting husbandry methods to counter the known epidemiological factors, in an effort to prevent reinfection.

Finally it seems to me that the epidemiology of hoose, consisting of the interplay of many variable factors, is so complex that an endeavour to prevent the establishment of lungworms in the host body appears more rational than an attempt to remove them after they have become established.

Yours faithfully,
D. ALLAN.

Drummond-More,
Portadown Road,
Armagh.

September 5th, 1957.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
16th to 31st July, 1957		6	1	9	21	—	38
Corresponding period in	1956	26	—	—	34	—	50
	1955	11	1	—	27	—	60
	1954	11	—	—	17	—	80
1st January to 31st July, 1957		242	6	37	516	—	568
Corresponding period in	1956	1,063	8	13	388	—	471
	1955	472	2	6	371	—	964
	1954	171	3	12	567	—	969